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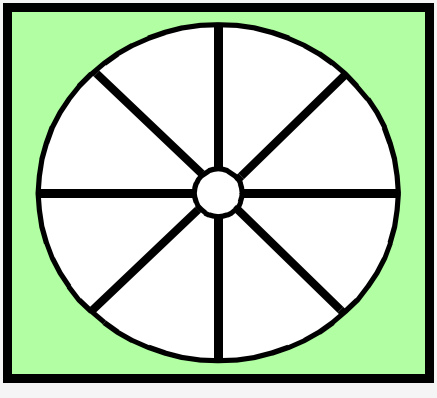
SPECTRUM Enterprise Manager

Device Management

SmartSwitch 2000



Supports Management Module SM-CSI1068/80/87

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Preface

Use this guide as a reference for the SPECTRUM SmartSwitch Router management software. Before using this guide, you should be familiar with SPECTRUM's functions and navigational techniques as described in the ***Administrator's Reference*** and the ***Operator's Reference***.

For the purposes of this guide, a SmartSwitch Module is referred to as a "device."

Conventions

This guide uses the following conventions:

- Menu selections and buttons referenced in text appear in **bold**; for example, **Configuration** or **Detail**.
- Buttons appear as shadowed boxes when describing their use; for example:
- Menu navigation appears in order of selection; for example, **Icon Subviews -> Utilities -> Application**.
- Referenced chapter titles and section headings appear in *italics*.
- Referenced documents appear in ***bold italics***.

Related SPECTRUM Documentation

It is important when using this guide that you have a clear understanding of SPECTRUM functionality and navigation techniques as described in the following recommended documentation:

Operator's Reference

Administrator's Reference

Report Generator User's Guide

Application View Reference

Getting Started with SPECTRUM for Operators

Getting Started with SPECTRUM for Administrators

How to Manage Your Network with SPECTRUM

This guide also references the following documents:

SPECTRUM Portable Management Application Tools Guide

SPECTRUM Routing Services Management Module Guide

SPECTRUM Portable Management Application for the 2E42 Fast Ethernet SmartSwitch User's Guide

Other Related Documentation

Refer to the following documentation for more information on managing TCP/IP-based networks:

Martin, James, Kathleen Kavanagh Chapman, Joe Leben. ***Local Area Networks, Architectures and Implementations***, 2nd ed. Englewood Cliffs, NJ: Prentice Hall, 1994.

Rose, Marshall T. ***The Simple Book — An Introduction to Management of TCP/IP-based Internets***. Performance Systems International, Inc.

Stallings, William. ***Data and Computer Communications***, 4th ed. New York: Macmillan Publishing Company, 1994.

Tanenbaum, Andrew S. ***Computer Networks***, 3rd ed. Englewood Cliffs, NJ: Prentice Hall, 1996.

Introduction

This section introduces the SPECTRUM management module covering the SmartSwitch Modules described below.

What Is in This Section

It describes the following:

- SmartSwitch Modules
- SPECTRUM Support
  - Accessing SPECTRUM Views from the Device Icon
  - Accessing Device-Specific Subviews
- SPECTRUM Views Roadmap
- SPMA Support

SmartSwitch Modules

The 8H02-16, 2E42-27, 2E42-27R, 2E43-27, and 2E43-27R SmartSwitch Modules are all high performance Ethernet switching devices that provide Fast Ethernet uplinks.

The 8H02-16 is a 16-port device having 14 standard 10Base-T front panel ports that are supported by RJ-45 connectors and two 100Base-TX or multi-mode fiber 100Base-FX uplinks using Fast Ethernet Port Interface Modules.

The 2E42-27 and 2E42-27R devices expand the capabilities of the 8H02-16 by providing 27 ports including 24 standard Ethernet ports with RJ-45 connectors, two slots for Fast Ethernet Port Interface Modules, and one slot for a High Speed Interface Module to provide a high-speed ATM uplink or FDDI connectivity. The 2E42-27 has a single power supply and the 2E42-27R has dual redundant power supplies.

The 2E43-27 and 2E43-27R provide the same feature set as the 2E42-27 and 2E42-27R but come equipped with two RJ21 connectors to support 24 ports of switched Ethernet rather than

the 24 RJ45's. This allows the use of Telco cables in the wiring closets with patch panels to reduce the complexity of cable management.

All five devices offer RMON, port redirection, broadcast suppression, and full duplex support on all interfaces, with support for IEEE Auto-Negotiation on the 100Base-TX ports.

SPECTRUM Support

When modeling a device, the model type **SS8H** appears in the Select Model Type dialog box. The names listed below refer to the model names used in SPECTRUM to specify attributes, actions, and associations for SmartSwitch Modules:

- 8H02_16 (SmartSwitch Module, Model 8H02-16)
- 2E42_27 (SmartSwitch Module, Model 2E42-27)
- 2E42_27R (SmartSwitch Module, Model 2E42-27R)
- 2E43_27 (SmartSwitch Module, Model 2E43-27)
- 2E43_27R (SmartSwitch Module, Model 2E43-27R)

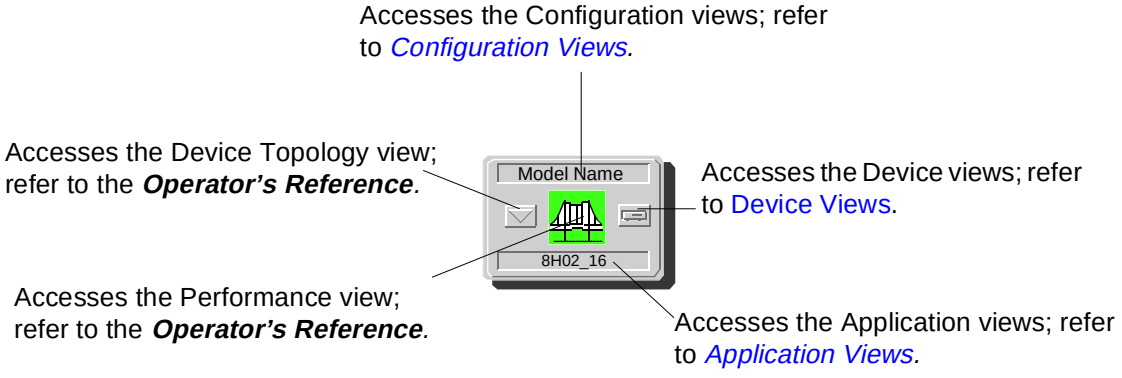
Accessing SPECTRUM Views from the Device Icon

The Device icon provides access to SPECTRUM views that display device-specific information. Access these views using double-click zones (Figure 1) or Icon Subviews menus (Figure 2).

To access the Icon Subviews menu, do the following:

1. Highlight the icon.
2. From the View menu, select **Icon Subviews** or click the applicable mouse button (middle or right).

Figure 1: Using Double-Click Zones to Access SPECTRUM Views


Accesses the Configuration views; refer to *Configuration Views*.
Accesses the Device Topology view; refer to the ***Operator's Reference***.
Model Name
8H02_16
Accesses the Device views; refer to Device Views.
Accesses the Performance view; refer to the ***Operator's Reference***.
Accesses the Application views; refer to *Application Views*.

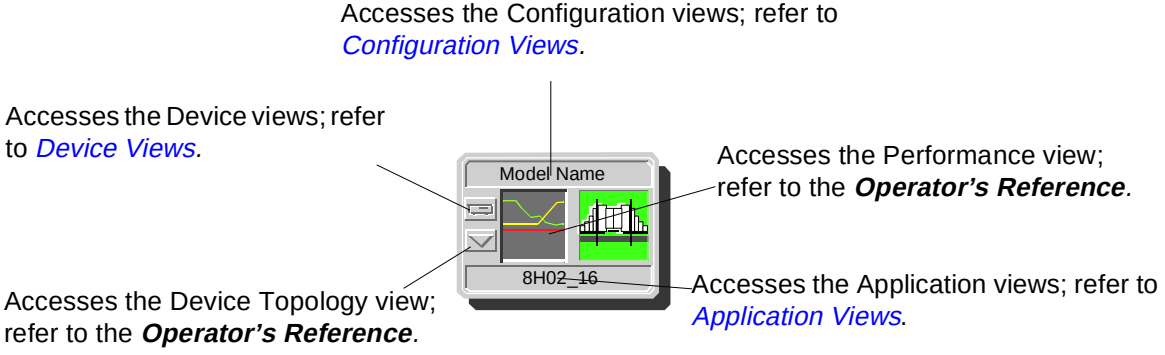
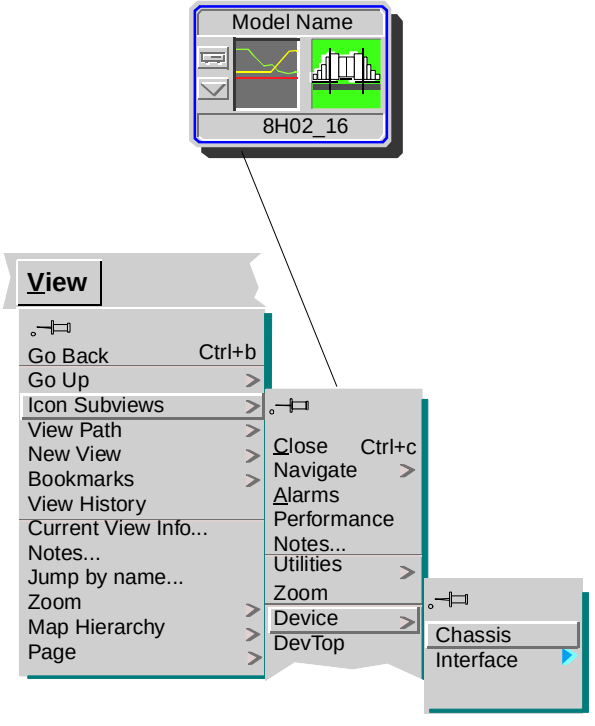

Accesses the Configuration views; refer to *Configuration Views*.
Accesses the Device views; refer to *Device Views*.
Model Name
8H02_16
Accesses the Performance view; refer to the ***Operator's Reference***.
Accesses the Device Topology view; refer to the ***Operator's Reference***.
Accesses the Application views; refer to *Application Views*.

Figure 2: Using the Icon Subviews Menu to Access SPECTRUM Views



Accessing Device-Specific Subviews

Icon Subviews menus provide access to views that display device-specific information. Figure 3 shows an example of an Icon Subviews menu for the Bridging icon located within the Chassis Device view. The device-specific Icon Subviews menu selections are described under the applicable section within this guide. The menu

selections that are common to all devices are described in the ***Administrator's Reference*** and the ***Operator's Reference***.

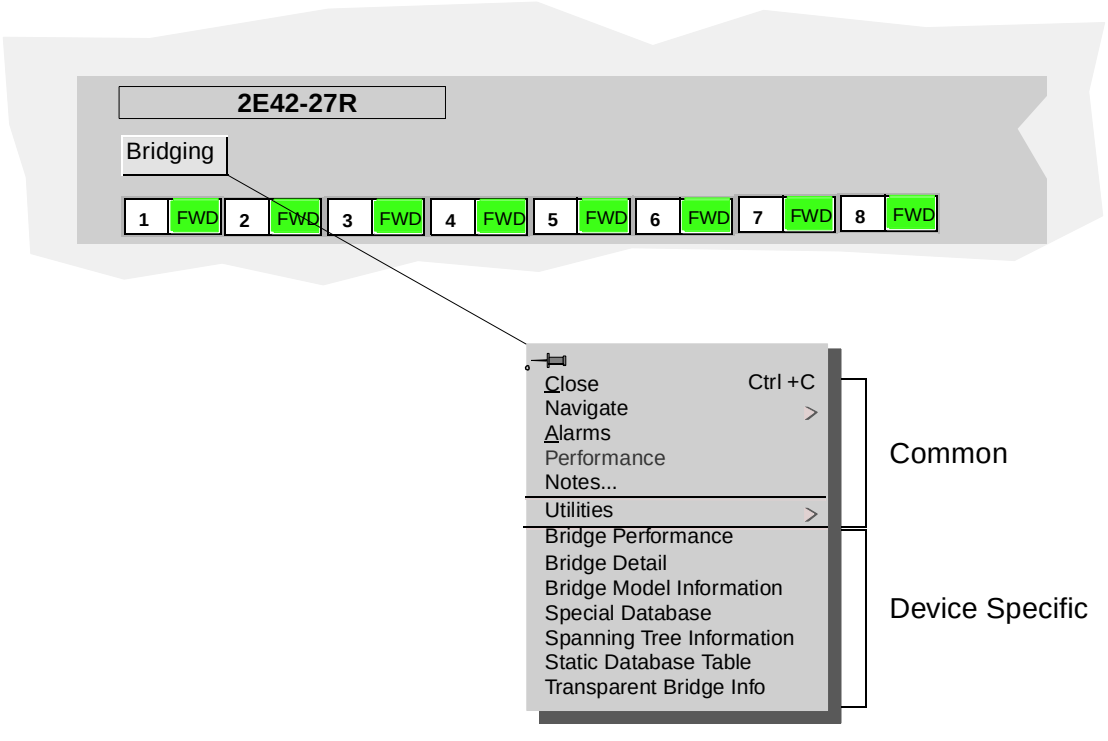
To access the Icon Subviews menu using the View menu, do the following:

1. Highlight the icon.
2. From the View menu, select **Icon Subviews**.

To access the Icon Subviews menu using the mouse button, do the following:

1. Position the mouse pointer on the icon.
2. Click the appropriate button, middle or right.

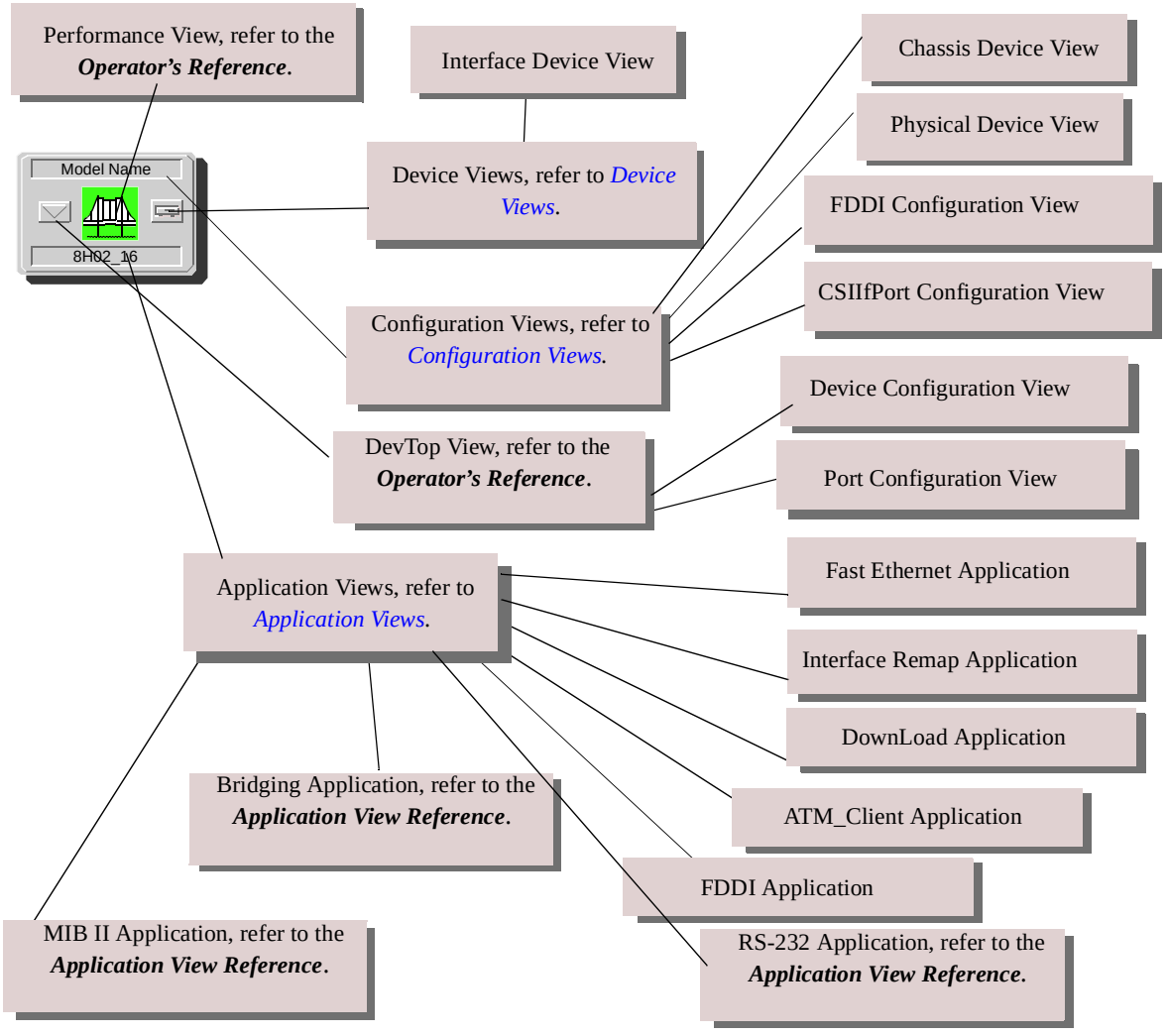
Figure 3: Accessing Device-Specific Subviews



SPECTRUM Views Roadmap

Figure 4 shows a "roadmap" of the SPECTRUM views for this device. These views are accessible from double-click zones (Figure 1) and Icon Subviews menus (Figure 2 and Figure 3).

Figure 4: SPECTRUM Views Roadmap

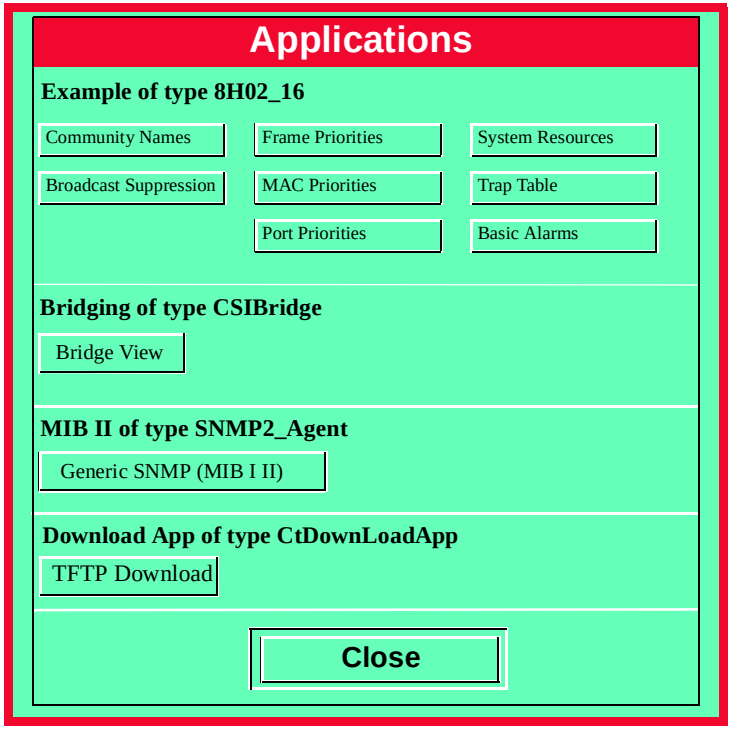

Performance View, refer to the *Operator's Reference*.
Interface Device View
Chassis Device View
Physical Device View
Model Name
8H02_16
Device Views, refer to *Device Views*.
FDDI Configuration View
CSIIfPort Configuration View
Configuration Views, refer to *Configuration Views*.
Device Configuration View
DevTop View, refer to the *Operator's Reference*.
Port Configuration View
Application Views, refer to *Application Views*.
Fast Ethernet Application
Interface Remap Application
DownLoad Application
Bridging Application, refer to the *Application View Reference*.
ATM_Client Application
FDDI Application
MIB II Application, refer to the *Application View Reference*.
RS-232 Application, refer to the *Application View Reference*.

SPMA Support

SPECTRUM also supports SPECTRUM Portable Management Application (SPMA) functionality for these devices. Figure 5 shows an example of an SPMA Applications view. To open the SPMA Applications view, do the following:

1. Highlight the Device icon.
2. From the View menu, select **Icon Subviews -> Utilities -> Applications**.

Figure 5: SPMA Applications View



The SPMA Applications view provides the buttons, described below, that are used to access SPMA-specific views and dialog boxes. For more information, refer to the ***SPECTRUM Portable Management Application for the 2E42 SmartSwitch User's Guide*** or the ***SPECTRUM Portable Management Application Tools Guide***.

Community Names

This button accesses the Community Names Tool, which allows you to change device community names. Refer to *Using the SPMA Community Names Tool* in the ***Tools Guide***.

Frame Priorities

This button accesses the Frame Priorities window, which allows you to set the priority in which frames types are queued for transmission by the device. Refer to the **2E42 User's Guide**.

System Resources

This button accesses a window that displays current physical and logical system resources and utilizations on the device. Refer to the **2E42 User's Guide**.

Broadcast Suppression

This button allows you to monitor broadcast traffic statistics on each interface and set thresholds to limit broadcast traffic over the device. Refer to the **2E42 User's Guide**.

MAC Priorities

This button accesses the MAC Priorities window, which allows you to set the priority in which frames are queued by MAC address for transmission by the device. Refer to the **2E42 User's Guide**.

Trap Table

This button accesses the SNMP Trap Tool, which allows you to establish which network management workstations on your network receive trap alarms from a selected device. Refer to Using the SNMP Traps Tool in the Tools Guide.

Port Priorities

This button accesses the Port Priority window, which allows you to set the priority in which frames are queued on selected ports for transmission by the device. Refer to the **2E42 User's Guide**.

Basic Alarms

This button allows you to configure alarms and events for each available interface. Refer to the ***2E42 User's Guide***.

Bridge View

This button provides an overview of bridging information for each port and allows you to access all other bridge-related options. Refer to the **2E42 User's Guide**.

Generic SNMP (MIB I II)

This button accesses the MIB I, MIB II Tool, which allows you to change MIB I and MIB II object values. Refer to *Using the MIB I, MIB II Too*l in the ***Tools Guide***.

TFTP Download

This button accesses the TFTP Download Tool, which allows you to upgrade firmware on Cabletron devices equipped with Flash EEPROMs. Refer to *Using the TFTP Download Tool* in the *Tools Guide*.

Device Views

This section describes the following Device views and subviews available for the SmartSwitch Modules.

What Is in This Section

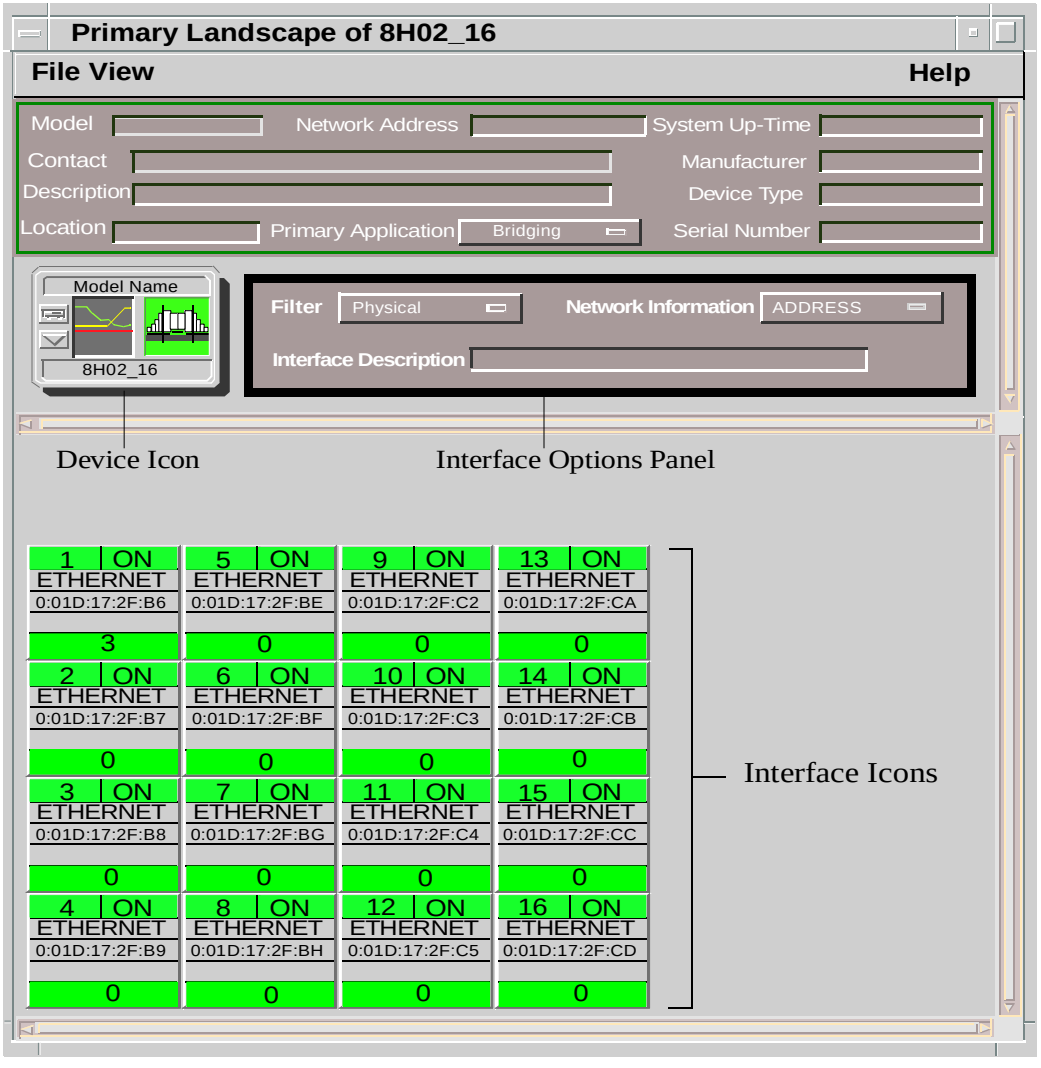
- Interface Device view
- Chassis Device view
- Physical Device view

Refer to *Introduction* for information on accessing SPECTRUM views from the Device icon and accessing device-specific subviews.

Interface Device View

This section describes the Interface icons and the Interface Options panel displayed in the Interface Device view. This view provides dynamic configuration and performance information for each interface on the device. If the configuration changes, SPECTRUM modifies the Device view after the next polling cycle to reflect the new configuration. This view also provides a Device icon that allows you to monitor the device operation and to access other device-specific views. Figure 6 shows an example of the Interface Device view for the Model 8H02-16. The views for the Model 2E42-27 and Model 2E43-27 are similar except for the number of Interface icons.

Figure 6: Interface Device View



Interface Icon

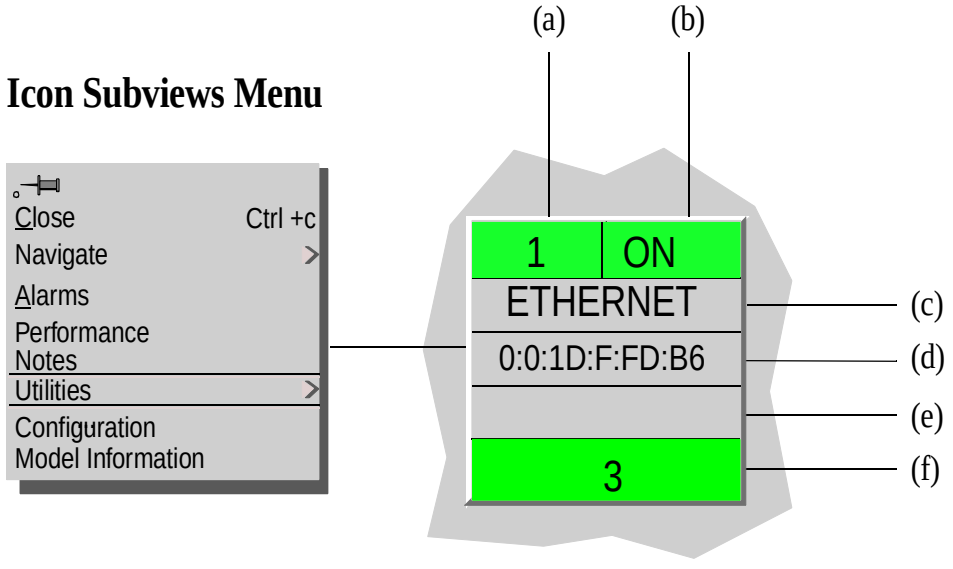
These icons represent the interfaces or ports of the device. The icons identify the type of interface or port (e.g., Ethernet) and provide statistical information. Figure 7 shows an example of an Interface icon, its Icon Subviews menu, and its labels/double-click zones

Note:

The callouts (a through f) displayed in the illustration below identify the label and, if available, the view to which it provides double-click zone access. For example, the icon area referred to by callout (b) displays the administrative status and provides double-click access to the Port Configuration - CSIfPort view.

The menu displayed in the illustration is the Icon Subviews menu for that Interface icon.

Figure 7: Interface Icon



a Interface Label

b Administrative Status Label/Port Configuration-CSIIfPort View

c Interface Type Label

d MAC Address Label/CSI Interface Port Model Information View

e Network Information Label/Network Information Panel Dialog Box

f Gauge Label/Performance - CSIIfPort View

Interface Icon Subviews Menu

Table 1 describes the Interface icon device-specific subviews menu selections. For

information on accessing device-specific subviews menus. See *Introduction*.

Table 1: Interface Icon Subviews Menu

Menu Selection	Description
Configuration	Opens the Device Configuration view described in *Configuration Views*.
Model Information	Opens the Model Information view described in the ***Operator's Reference***.

Interface Label

This label displays the interface (port) number.

Administrative Status Label

This label displays the status of this interface. Double-click this label to open the Port Configuration - CSIIfPort view described in *Configuration Views*. Table 2 and Table 3 list the possible states relative to the application selected (Physical or Bridging). The default application for this view is Physical (MIB-II). To select the application to be displayed, click the **Filter** menu button in the Interface Options panel. (Refer to the *Interface Options Panel* description for more information on the Filter menu button.)

Table 2: Administrative Status for the Physical or MIB II Application

Color	Status	Description
Green	ON	Port is operational.
Blue	OFF	Port is off.
Yellow	TST	Port is in the test mode.

Table 3: Administrative Status for the Bridging Application

Color	Status	Description
Green	FWD	Bridge port is forwarding.
Blue	DIS	Port is disabled.
Magenta	LST	Bridge is in the listening mode.
Magenta	LRN	Bridge is in the learning mode
Orange	BLK	Bridge port is in the blocking mode.
Red	BRK	Bridge port is broken.
Blue	UNK	Status is unknown.

Interface Type Label

This label displays the interface type. Table 4 lists the possible interface types.

Table 4: Interface Types

Type	Description
Other	None of the following
Reg1822	Regular 1822
HDH1822	HDLC Distant Host protocol
DDNX25	Defense Data Network X.25
rfc877X25	RFC877 X.25
Ethernet	Ethernet CSMA/CD
iso88023	ISO CSMA/CD

Table 4: Interface Types (Continued)

Type	Description
iso88024	ISO token bus
iso88025	ISO token ring
iso88026	ISO man
starLan	StarLAN IEEE 802.3
Prot10MB	ProNET 10 Mbps
Prot80MB	ProNET 80 Mbps
HyChan	Hyperchannel
FDDI	Fiber Distributed Data Interface
LAPB	X.25 Line Access Procedure, Balanced
SDLC	IBM Synchronous Data Link Control protocol
T1	T1 link (USA and Japan)
CEPT	T1 link (Europe)
BasicISDN	Basic Integrated Services Digital Network
PrimISDN	Proprietary Integrated Services Digital Network
PPSerial	Proprietary Point to Point Serial
PPP	Point to Point Protocol
SFTWARLPBK	Software Loopback
CLNPoverIP	Connectionless Network Protocol over IP
Enet3MB	Ethernet 3 Mbps

Table 4: Interface Types (Continued)

Type	Description
XNSoverIP	Xerox Network Service Protocol over IP
SLIP	Generic Serial Line IP
ULTRA	ULTRA Technologies
T-3	T3 link
SMDS	Switched Multimegabit Data Service
FrameRelay	T1 Frame relay

MAC Address Label

This label displays the MAC address of the device interface. Double-click this label to open the CSI Interface Port Model Information View display described in the ***Operator's Reference***.

Network Information Label

This label displays user-selectable network information (Address, Name, or Mask). The default is Address.

To change this label's display, use the Interface Options panel described later in this chapter, or do the following:

1. Double-click the label to open the Network Information Panel dialog box.
2. Click the network information entry you wish to display.
3. Click **OK**.

Gauge Label

This label displays the performance statistic determined by the Gauge Control Panel for this interface. (Refer to the *Gauge Control Panel* description for more information.) Double-click this label to open the Performance - CSIIfPort view described in the ***Operator's Reference***.

Interface Options Panel

This area of the Interface Device view (Figure 6) allows you to modify the presentation of a

highlighted icon. Double-click a non-text area of this panel to open the Gauge Control Panel view described later in this chapter. The Interface Options panel provides the information described below.

Filter

This menu button allows you to select the application to be displayed by the Interface icons. You can select other applications such as IP routing if the SPECTRUM Routing Services Management Module is loaded. For more information, refer to the ***Routing Services Management Module Guide.***

Network Information

This menu button allows you to select the type of information displayed in the Network Information label of the highlighted icon. Possible selections are ADDRESS, NAME, or MASK.

Interface Description

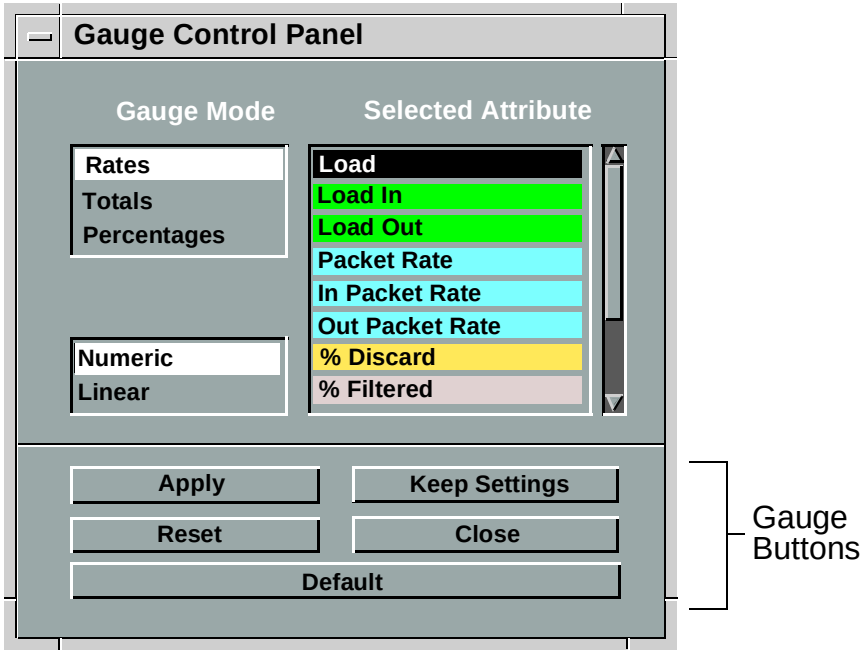
This field provides a description of the highlighted interface. If no interface is highlighted, this field is empty or shows the interface previously highlighted.

Gauge Control Panel

This view (Figure 8) allows you to change the type of statistical information displayed on the Gauge label of the Interface icon. To access the Gauge Control Panel view, double-click the background of the Interface Options panel, or do the following:

1. Highlight the Interface Options panel.
2. From the View menu, select **Icon Subviews -> Gauge Control Panel**.

Figure 8: Gauge Control Panel



The Gauge Control Panel provides the following:

- Gauge Mode area
- Selected Attribute area
- Gauge Type area
- Gauge buttons

Gauge Mode

This area allows you to select the type of information shown on the Gauge label of the Interface icon: Rates, Totals, or Percentages. The Percentages selection displays the percentage of the selected interface compared to the rest of the interfaces.

The color displayed on the Gauge label depends upon the particular mode and statistical attribute selected. Table 5 and Table 6 list the attributes and their corresponding colors for the Totals mode and Rates mode, respectively.

Table 5: Totals Mode: Attributes and Corresponding Color

Selected Attribute	Color
Errors	Orange
In Packets	Blue
Out Packets	Blue
In Octets	Green
Out Octets	Green
Discards	Tan
Forwarded	Purple
Host Bound	Yellow
Transmitted	White
Filtered	Gray

Table 6: Rates Mode: Attributes and Corresponding Color

Selected Attribute	Color
Load	Green
Load In	Green
Load Out	Green
Packet Rate	Blue
In Packet Rate	Blue
Out Packet Rate	Blue

Table 6: Rates Mode: Attributes and Corresponding Color

Selected Attribute	Color
% Discard	Tan
% Filtered	Gray
%Forwarded	Violet
%Host Bound	Yellow
%Error	Orange
%Transmitted	White

Selected Attribute
This area allows you to select the statistical attribute displayed on the Interface icon's Gauge label. The label changes color to reflect the attribute selected.

Apply

Applies the current settings to the Gauge label for as long as the view is open.

Keep Settings

Saves the current settings while SpectroGRAPH is running. Settings return to default when you restart SpectroGRAPH.

Gauge Type
This area allows you to select either a numeric or linear display on the Gauge label.

Gauge Buttons
The following describes the Gauge buttons:

Reset

Returns the settings to the previously saved values.

Close

Closes the Gauge Control Panel view.

Default

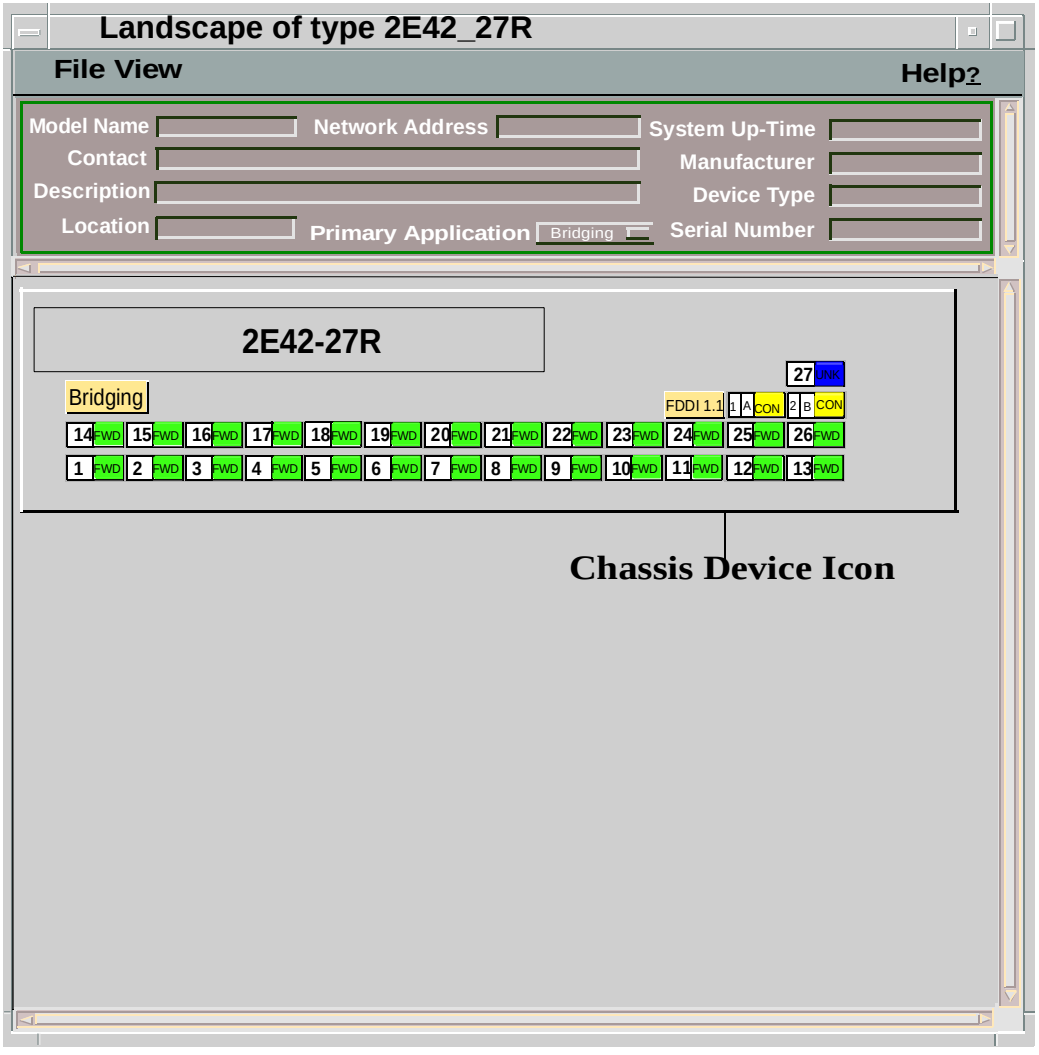
Returns the settings to the SPECTRUM default.

Chassis Device View

This view uses a Chassis Device icon to provide a logical representation of the device chassis and its interfaces or ports. The Chassis Device icon provides menu and double-click zone access to the views that monitor the interfaces.

Figure 9 shows an example of the Chassis Device view for the 2E42-27R device.

Figure 9: Chassis Device View



Chassis Device Icon

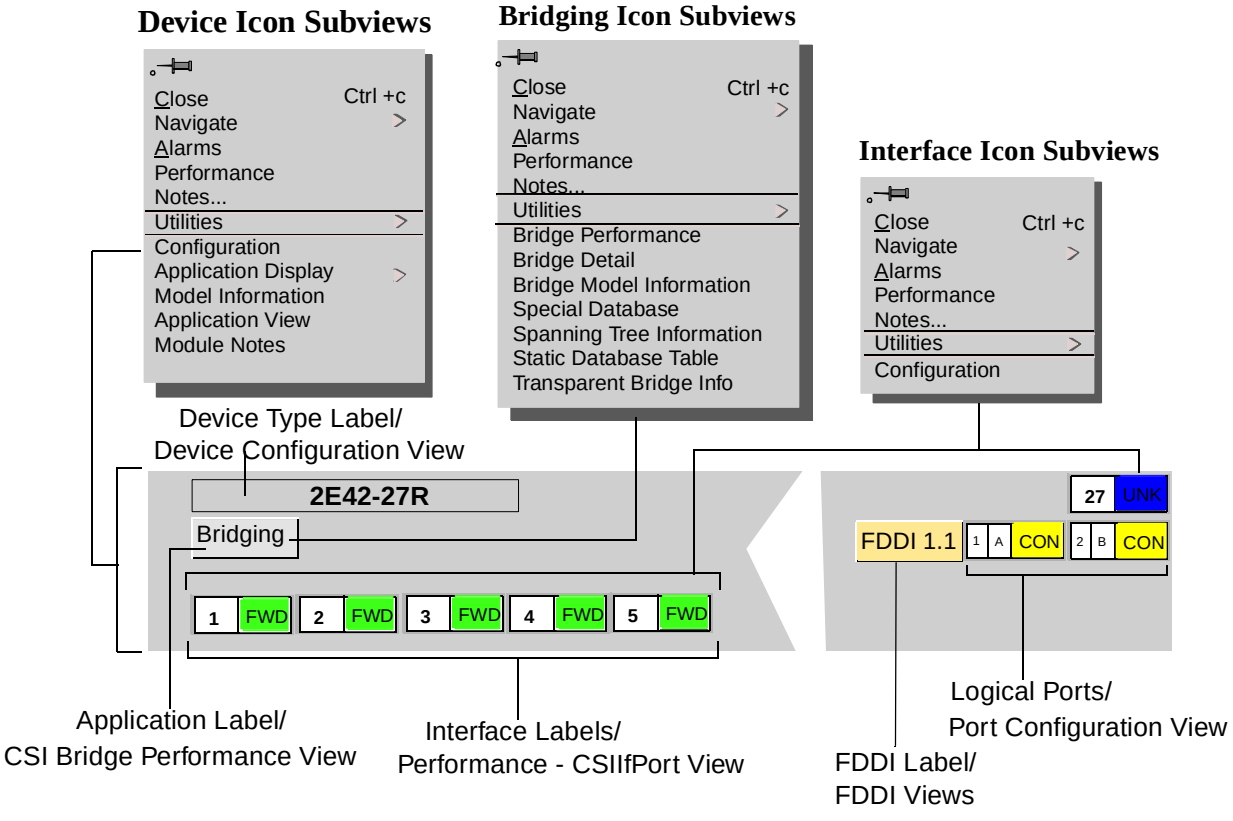
This icon is a logical representation of the physical device and its front panel interfaces or ports. This section describes the information available from the Chassis Device icon. Figure 10 shows an example of the Chassis Device icon for the 2E42-27R device.

Note:

The callouts displayed in this illustration identify the label name and the view to which it provides double-click access. For example, Device Type Label/Device Configuration View displays the device model number and provides double-click access to the Device Configuration view.

The menus displayed in the illustration are the Icon Subviews menus for that label.

Figure 10: Chassis Device Icon



Device Type Label

This label identifies the type of device. (Refer to Figure 10.) Double-click this area to open the Device Configuration view described in *Configuration Views*.Device Icon Subviews Menu

Table 7 lists each of the device-specific Icon Subviews menu selections available for this

device. For information on accessing device-specific subviews, see *Introduction*.

Table 7: Device Icon Subviews Menu

Menu Selection	Description
Configuration	Opens the Device Configuration view described in *Configuration Views*.
Application Display	Opens the Application menu selection. This menu selection allows you to select the physical or bridging application.
Model Information	Opens the Model Information view described in the ***Operator's Reference***.
Application View	Opens the Application view described in *Application Views*.
Module Notes	Opens the Module Notes dialog box.

Application Label

This label provides access to the Bridging Icon Subviews menu. (Refer to Figure 10.) Double-click the Application label to open the CSI Bridging Performance view described in the ***Operator's Reference***.

Bridging Icon Subviews Menu

Table 8 lists specific Icon Subviews menu selections for the Application Label. For information on accessing device-specific subviews, see the Introduction section.

Table 8: Application Label Icon Subviews Menu

Menu Selection	Description
Bridge Performance	Opens the Performance view described in the ***Operator's Reference.***

Table 8: Application Label Icon Subviews Menu

Bridge Detail	Opens the Detail view described in the ***Operator's Reference.***
Bridge Model Information	Opens the Model Information view described in the ***Operator's Reference***.
Special Database	Opens the Special Database view.
Spanning Tree Information	Opens the Spanning Tree Information view described in the ***Application Views*** section.
Static Database Table	Opens the Static Database Table view described in the ***Application Views*** section.
Transparent Bridge Info	Opens the Transparent Bridge Information view, with Forwarding Database and Port Tables described in the ***Application Views*** section.

Interface Labels

These labels identify the number and activity status of each port. (Refer to Figure 10.) Table 9 and Table 10 list the possible states relative to the application selected. Double-click the label to open the Performance - CSIIfPort view described in the ***Operator's Reference***.

Table 9: Interface Status for the Bridging Application

Color	Status	Description
Green	FWD	Bridge port is forwarding.
Blue	DIS	Port is disabled.
Magenta	LST	Bridge is in the listening mode.
Magenta	LRN	Bridge is in the learning mode

Table 9: Interface Status for the Bridging Application

Color	Status	Description
Orange	BLK	Bridge port is in the blocking mode.
Red	BRK	Bridge port is broken.
Blue	UNK	The status is unknown.

Table 10: Interface Status for the Physical (MIB II) Application

Color	Status	Description
Green	ON	Port is operational.
Blue	OFF	Port is off.
Yellow	TST	Port is in the test mode.

Interface Icon Subviews Menu

This menu's Configuration option opens the Configuration dialog box, which allows you to enable or disable the selected port. For information on accessing device-specific subviews, see the *Introduction*.

FDDI Label

This label provides access to the FDDI Icon Subviews menu. (Refer to Figure 10.) Double-click this label to open the FDDI Application views described in the ***Operator's Reference***.

FDDI Icon Subviews Menu

Table 11 describes each of the Icon Subviews menu selections available for FDDI. For

information on accessing device-specific subviews, see the *Introduction* section..

Table 11: FDDI Label Icon Subviews Menu

Menu Selection	Description
FDDI Performance	Opens the FDDI Performance view. (Not available for FddiNoMAC).
FDDI Configuration	Opens the FDDI Configuration view.
FDDI Station List	Opens the FDDI Station List view. (Not available for FddiNoMAC).
FDDI Model Information	Opens the Model Information view for FDDI.

Logical Ports Labels

These labels provide access to the Logical Port Icon Subviews menu. Double-click a label to open the Port Configuration View.

Logical Ports Icon Subviews Menu

Table 12 describes each of the Icon Subviews menu selections. For information on accessing device-specific subviews, see the *Introduction* section.

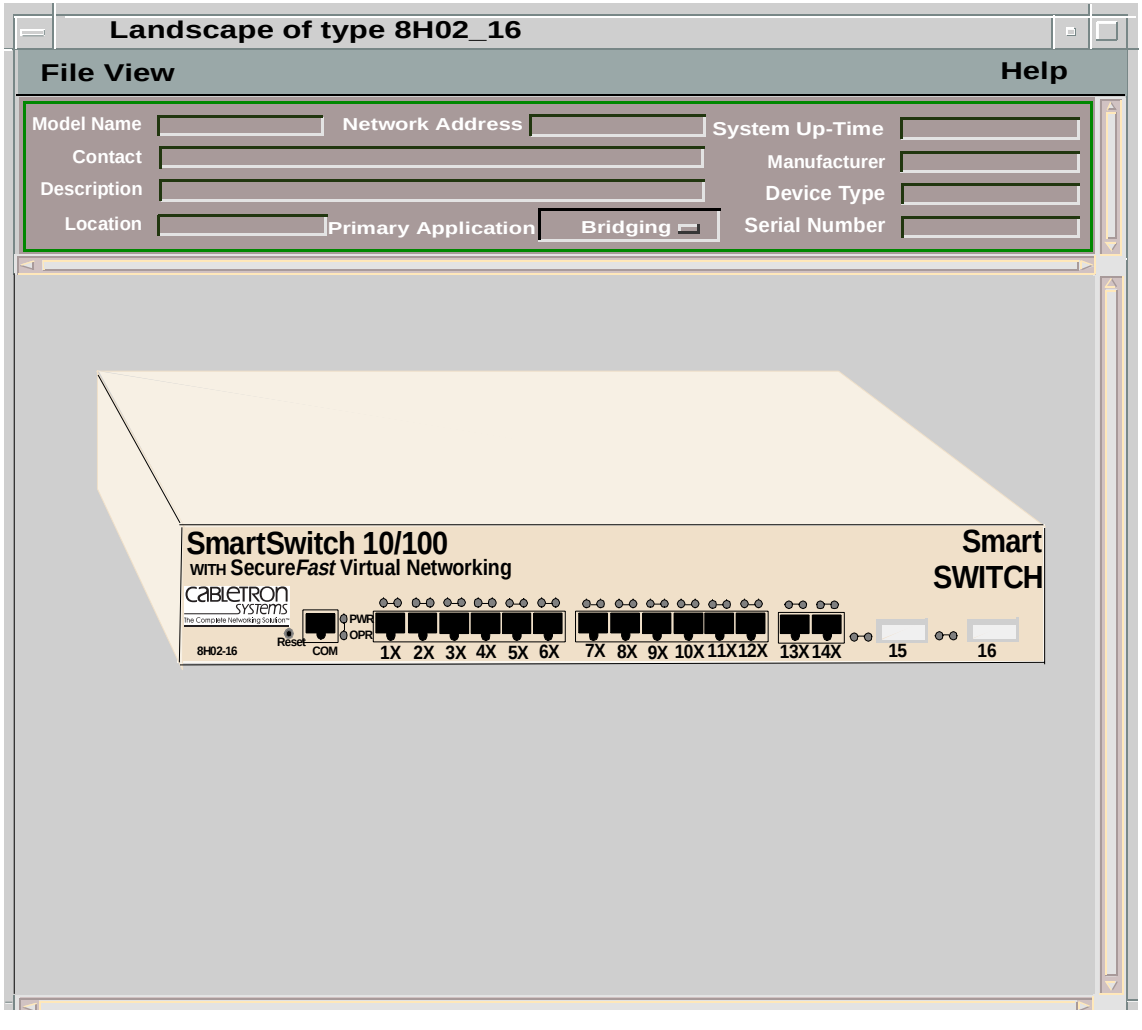
Table 12: Logical Ports Icon Subviews Menu

Menu Selection	Description
Port Notes	Opens the Port Notes facility.
Enable/Disable Port	Enables or disables the selected port.
Port Configuration View	Opens the Port Configuration view.

Physical Device View

This view provides a static image of the device and its ports or interfaces and does not change to reflect configuration status. Figure 11 is an example of the Physical Device view for the 8H02-16 device.

Figure 11: Physical Device View



Configuration Views

This section describes the Configuration views available for the SmartSwitch Modules. These views display network configuration and operating information for the device and its interfaces.

What Is in This Section

The following Configuration views are available for this device:

- Device Configuration
- Port Configuration - CSIIfPort
- FddiMAC Device Configuration
- Port Configuration

Refer to the *Introduction* section for information on *Accessing SPECTRUM Views from the Device Icon* and *Accessing Device-Specific Subviews*.

Device Configuration View

This view provides device -specific configuration information as well as access to other views that allow you to configure device components.

Device Configuration Information

This section of the Configuration view displays the following device-specific information.

Contact Status
Indicates whether a connection with the device has been established.

This view also provides the following SPMA view buttons that allow you to configure this device. Refer to the ***SPECTRUM Portable Management Application Tools Guide*** for details on the views accessible from these buttons.

Opens the Community Name window, which provides information on the SmartSwitch Module components.

Download Application

Opens the TFTP Download View, which enables you to upgrade the firmware for a SmartSwitch Module from a TFTP Boot or Bootp Server.

Trap Table

Opens the Trap Table, which allows you to set up your workstation to be notified of traps received and sent by the SmartSwitch Module.

Interface Configuration Table Information

This table within the Device Configuration view provides the following configuration information about the device's interfaces or ports.

Number of Interfaces

Displays the number of interfaces or ports available for this device.

Index

Displays the interface or port number.

Type

Displays the type of hardware interface or port. Table 13 lists the possible interface types.

Table 13: Interface Types

Type	Description
Other	None of the following
Reg1822	Regular 1822
HDH1822	HDLC Distant Host protocol
DDNX25	Defense Data Network X.25
rfc877X25	RFC877 X.25
Ethernet	Ethernet CSMA/CD

Table 13: Interface Types (Continued)

Type	Description
iso88023	ISO CSMA/CD
iso88024	ISO token bus
iso88025	ISO token ring
iso88026	ISO man
starLan	StarLAN IEEE 802.3
Prot10MB	ProNET 10 Mbps
Prot80MB	ProNET 80 Mbps
HyChan	Hyperchannel
FDDI	Fiber Distributed Data Interface
LAPB	X.25 Line Access Procedure, Balanced
SDLC	IBM Synchronous Data Link Control protocol
T1	T1 link (USA and Japan)
CEPT	T1 link (Europe)
BasicISDN	Basic Integrated Services Digital Network
PrimISDN	Proprietary Integrated Services Digital Network
PPSerial	Proprietary Point to Point Serial
PPP	Point to Point Protocol
SFTWARLPBK	Software Loopback
CLNPoverIP	Connectionless Network Protocol over IP
Enet3MB	Ethernet 3 Mbps

Table 13: Interface Types (Continued)

Type	Description
XNSoverIP	Xerox Network Service Protocol over IP
SLIP	Generic Serial Line IP
ULTRA	ULTRA Technologies
T-3	T3 link
SMDS	Switched Multimegabit Data Service
FrameRelay	T1 Frame relay

Phy Address
Displays the physical (MAC) address of the interface or port.

Max Frame Size
Displays the maximum frame size for the interface or port.

Oper Status
Displays the current operational state of this interface or port (Up, Down, or Testing).

Port Configuration - CSIIfPort View

This view provides information on the configuration and operating status of the device interfaces or ports.

To access the Port Configuration - CSIIfPort view for a particular interface or port, do the following:

1. Within the Interface Device view, highlight the Interface icon.
2. From the View menu, select **Icon Subviews -> Configuration**.

This view provides the following information:

Interface Index
Displays the numerical value identifying the interface or port.

Interface Type
Displays the type of interface or port.

Operation Status
Displays the current operating status of the interface or port. Possible values are On, Off, and Test.

Admin Status
Displays the current administrative status of the interface or port. Possible values are On, Off, and Test.

IF Description
Provides a description of the interface or port.

FddiMAC Device Configuration View

The FddiMAC Device Configuration view provides configuration and operating status information.

To access this view, do the following:

1. Highlight the FddiMAC icon in the Application view (Icon mode) or the FddiMAC text label (List mode).
2. From the View menu, select **Icon Subviews -> Configuration** or click the applicable mouse button (middle or right) and select **Configuration**.

Station Configuration

This section of the FddiMAC Device Configuration view provides the following configuration information on the FDDI station.

Ring State
The current state of the FDDI Ring. Table 14 lists the possible states and their descriptions.

Table 14: FDDI Ring States

Ring States	Description
Isolated	The concentrator is not attached to the ring.
Non-Op	The concentrator is attempting to enter the ring.
Ring-Op	The ring is operational.
Detect	The claim/beacon process of the FDDI ring protocol has exceeded one second. This indicates a potential problem.
Non-Op-Dup	The ring failed to complete the claim/beacon process because a duplicate FDDI address has been detected.
Ring-Op-Dup	The ring is operational, but a duplicate FDDI address has been detected.
Directed	The claim/beacon process did not complete within nine seconds. The concentrator is now sending directed beacons to indicate a problem.
Trace	A problem has been detected with the station or its upstream neighbor. A trace is being sent to notify the upstream neighbor of the problem. The concentrator and all stations between the concentrator and its upstream neighbor can perform self-tests.

MAC Configuration

The actual configuration of the station. Table 15 lists the possible configurations and their descriptions.

Table 15: SMT MAC Configurations

Ring States	Description
Isolated	The path is not inserted into any path.

Table 15: SMT MAC Configurations (Continued)

Local_A	The A port is inserted into a local path and the B port is not.
Local_B	The B port is inserted into a local path and the A port is not.
Local_AB	Both A and B are inserted into a local path.
Local_S	The S port is inserted into a local path.
Wrap_A	The secondary path is wrapped to the A port.
Wrap_B	The secondary path is wrapped to the B port.
Wrap_AB	The primary path is wrapped to the B port and the secondary path is wrapped to the A port.
Wrap_S	The primary port is wrapped to the S port.
C_Wrap_A	The primary and secondary paths are joined internally in the station and wrapped to the A port. Regarding token flow, all resources on the secondary path precede those of the primary path.
C_Wrap_B	The primary and secondary paths are joined internally in the station and wrapped to the B port. Regarding token flow, all resources on the secondary path precede those of the primary path.
C_Wrap_S	The primary and secondary paths are joined internally in the station and wrapped to the S port. Regarding token flow, all resources on the secondary path precede those of the primary path.
Thru	The primary path enters the A port and emerges from the B port. The secondary path enters the B port and emerges from the A port.

Current MAC Path
The ring that this station resides on. Possible entries are Primary, Secondary, or Local.

MAC Address
The MAC (physical) address of this station.

MAC Count
The number of MACs supported by this station.

The number of non-master ports on this station.

Master Ports
The number of master ports on this station.

SMT Information

This section of the FddiMAC Device Configuration view provides the following configuration information on the FDDI SMT:

SMT Version
The version of Station Management (SMT) running.

OBS Present
Indicates whether an Optical Bypass Switch (OBS) is connected.

T-Notify (sec)
The timer value, in seconds, used in Neighbor Notification Protocol. The allowed range is from 2 to 30 seconds.

T-Req (milli sec)
The Target Token Rotation Time (TTRT) bid, in milliseconds, made by this concentrator.

T-Neg (milli sec)
The winning TTRT bid, in milliseconds, on the ring.

TVX (milli sec)
The valid transmission time, in milliseconds.

Port Configuration View

The Port Configuration view provides information on the configuration and operating status of the ports. To access this view, do the following:

1. Highlight the Logical Port icon in the Chassis Device view.
2. From the View menu, select **Icon Subviews -> Port Configuration View**.

The Port Management section of the FDDI Port Configuration view provides the following information:

Port Action
Allows you to enable/disable the port. The state returns to “Other” once the port has been Enabled/Disabled.

Port State
The status of this port. Possible states are disabled, connecting, standby, and active.

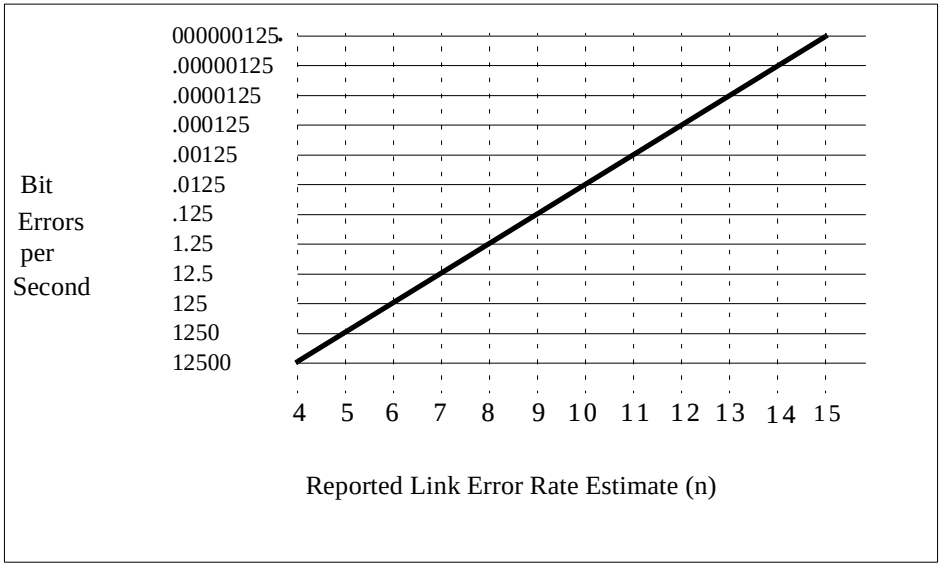
Port Type

The type of port. Possible port types are A_Port, B_Port, Slave, or Master.

Link Error Rate Estimate

The link error rate estimate is a cumulative long-term average of the bit error rate, which represents the quality of the physical link. The link error rate estimate is computed when the port is connected and every 10 seconds thereafter. It ranges from 10^{-4} to 10^{-15} and is reported as a whole integer. For example, if the port's link error rate estimate is computed to be 10^{-5}, the value reported in this field would be 5, which represents an actual rate of 1,250 bit errors per second. A lower link error rate estimate indicates a higher bit error rate as shown in Figure 12.

Figure 12: Link Error Rate Estimate



Link Error Monitor Count
The aggregate link error monitor count. This count is set to zero on station power up and increments each time the port's link error monitor detects an error. An increasing link error monitor count usually indicates a problem with the connectors or the cable between this port and the node.

Link Error Rate Cutoff
The link error rate threshold at which a link connection is flagged as faulty and the port disabled by SMT. The default link error rate cutoff threshold is 7, which represents 12.5 bit errors per second.

Link Error Rate Alarm
The link error rate threshold above which an alarm for the port will be generated. The default link error rate alarm threshold is 8, which represents 1.25 bit errors per second.

Link Error Monitor Reject Count
The link error monitor count of the times the link has been rejected.

Event and Alarm Messages

This chapter lists the types of events and alarms generated by the SmartSwitch Modules and provides any probable cause messages corresponding to these alarms.

Device Events and Alarms

Table 16 lists the SPECTRUM database directory paths (in bold) and the messages displayed for the Event Log and Alarm Manager when applicable.

Table 16: SmartSwitch Module Events and Alarms

Message in the Event Log	Alarm Manager Probable Cause Message
CsEvFormat/Event00010306 {d "%w- %d %m-, %Y - %T"} - A(n) {t} device, named {m}, has been cold started. (event [{e}])	No probable cause message
CsEvFormat/Event00010307 {d "%w- %d %m-, %Y - %T"} - A(n) {t} device, named {m} has been warm started, (event [{e}])	No probable cause message

Table 16: SmartSwitch Module Events and Alarms (Continued)

Message in the Event Log	Alarm Manager Probable Cause Message
CsEvFormat/Event00010308 {d "%w- %d %m-, %Y - %T"} - A(n) {t} device, named {m}, has detected a communication Link Down. (event [{e}])	CsPCause/Prob00010308 Communication link is down.
CsEvFormat/Event00010309 {d "%w- %d %m-, %Y - %T"} - A(n) {t} device, named {m}, has detected a communication Link Up. (event [{e}])	No probable cause message
CsEvFormat/Event0001030a {d "%w- %d %m-, %Y - %T"} - A(n) {t} device, named {m}, has detected an Authentication Failure. (event [{e}])	CsPCause/Prob0001030a Authorization failure. Other user is trying to connect to device with an invalid community string.
CsEvFormat/Event0001030b {d "%w- %d %m-, %Y - %T"} - A(n) {t} device, named {m}, has detected an EGP Neighbor Loss. EGP Neighbor IP address is {0 1}. (event [{e}])	CsPCause/Prob0001030b Lost contact with EGP neighbor.
CsEvFormat/Event000d01a0 {d "%w- %d %m-, %Y - %T"} - A Port Interface Module has been inserted into port {I 3} of interface {I 1} on {m} ({t}). (event [{e}]).	CsPCause/Prob000d01a0 A Port Interface Module has been physically inserted.

Table 16: SmartSwitch Module Events and Alarms (Continued)

Message in the Event Log	Alarm Manager Probable Cause Message
CsEvFormat/Event000d01a1 {d "%w- %d %m-, %Y - %T"} - A Port Interface Module has been removed from port {I 3} of interface {I 1} on {m} ({t}). (event [{e}])	CsPCause/Prob000d01a1 A Port Interface Module has been physically removed.
CsEvFormat/Event000d01a2 {d "%w- %d %m-, %Y - %T"} - Network configuration change reported by {m} ({t}). Device linked to port {I 3} on interface {I 1}. (event [{e}])	CsPCause/Prob000d01a2 A device supporting link integrity, fiber optic or twisted pair, has made a valid connection (link) to this port.
CsEvFormat/Event000d01a3 {d "%w- %d %m-, %Y - %T"} - Port {I 3} on interface {I 1} of {m} ({t}), has unsegmented. (event [{e}]).	CsPCause/Prob000d01a3 A device previously linked with this port has been removed, powered down, or the cable segment has a fault.
CsEvFormat/Event000d0351 {d "%w- %d %m-, %Y - %T"} - Front panel redundant port {I 1} has been activated by device {m} of type {t}. (event [{e}])	**CsPCause/Prob000d035**1 A new port has been activated for the front panel redundant circuit. This does NOT indicate this port is usable, but is being tested.

Table 16: SmartSwitch Module Events and Alarms (Continued)

Message in the Event Log	Alarm Manager Probable Cause Message
CsEvFormat/Event000d0001 {d "%w- %d %m-, %Y - %T"} - {m} of type {t} has reported a root change. (event [{e}])	CsPCause/Prob000d0001 This bridge has become the new root of the Spanning Tree.
CsEvFormat/Event000d0002 {d "%w- %d %m-, %Y - %T"} - Bridge {m} of type (t) has reported a network topology change (event [{e}]).	CsPCause/Prob000d0002 A port has transitioned from the Learning state to the Forwarding state, or from the Forwarding state to the Blocking state.
CsEvFormat/Event00830000 {d "%w- %d %m-, %Y - %T"} - DLM LostContact trap for Destination Address {0 1}, Owner Address {0 2} from {t} device, named {m}. (event [{e}]).	No probable cause message

Table 16: SmartSwitch Module Events and Alarms (Continued)

Message in the Event Log	Alarm Manager Probable Cause Message
CsEvFormat/Event00830001 {d "%w- %d %m-, %Y - %T"} - DLM Threshold Trap for Destination Address {0 1}, Owner {0 2}, OID sequence {I 3}, OID Object {0 4} from {t} device, named {m}. (event [{e}]).	No probable cause message
CsEvFormat/Event00830002 {d "%w- %d %m-, %Y - %T"} - DLM ReestabContact Trap for Destination Address {0 1}, Owner Address {0 2} from {t} device, named {m}. (event [{e}])}.	No probable cause message

Application Views

What Is in This Section

This section describes the device-specific applications listed below for the SmartSwitch Modules. The corresponding application model type is shown in parentheses.

- Interface Remap (CtIfRemapApp)
- Fast Ethernet (FastEnetApp)
- FDDI FNB Application (FddiMAC)
- ATM Application (ATM_Client)
- DownLoad App (CtDownLoadApp)

Common Applications Not Covered Here

This device supports the following common applications described in the ***Application View Reference***:

- Bridging (CSIBridge)
  - Spanning Tree (Ct_Stp_App)
  - Static (Static_App)
  - Transparent (CT_Tp_Appl)
- MIB-II (SNMP2_Agent)
  - ICMP (ICMP_App)
  - IP (IP2_App)
  - System (System2_App)
  - UDP (UDP2_App)
- RS-232 App (RFC1317App)

The following major application is available if you purchase the associated SPECTRUM product. The application is described within the documentation supplied with the product.

- Standard RMON (RMON App)
  - Ethernet Probe 1(RMONEthProbe) through Ethernet Probe 16 (RMONEthProbe)

Device Application View

This view shows the common and device-specific applications supported by this device and provides access to application-specific information.

Refer to *Device Views* for more information. Figure 13 shows an example of an Application

view in the Icon mode. Figure 14 shows an example of an Application view in the List mode.

To change the display mode, from the View menu select **Mode -> List** or **Icon**.

Figure 13: Device Application View (Icon Mode)

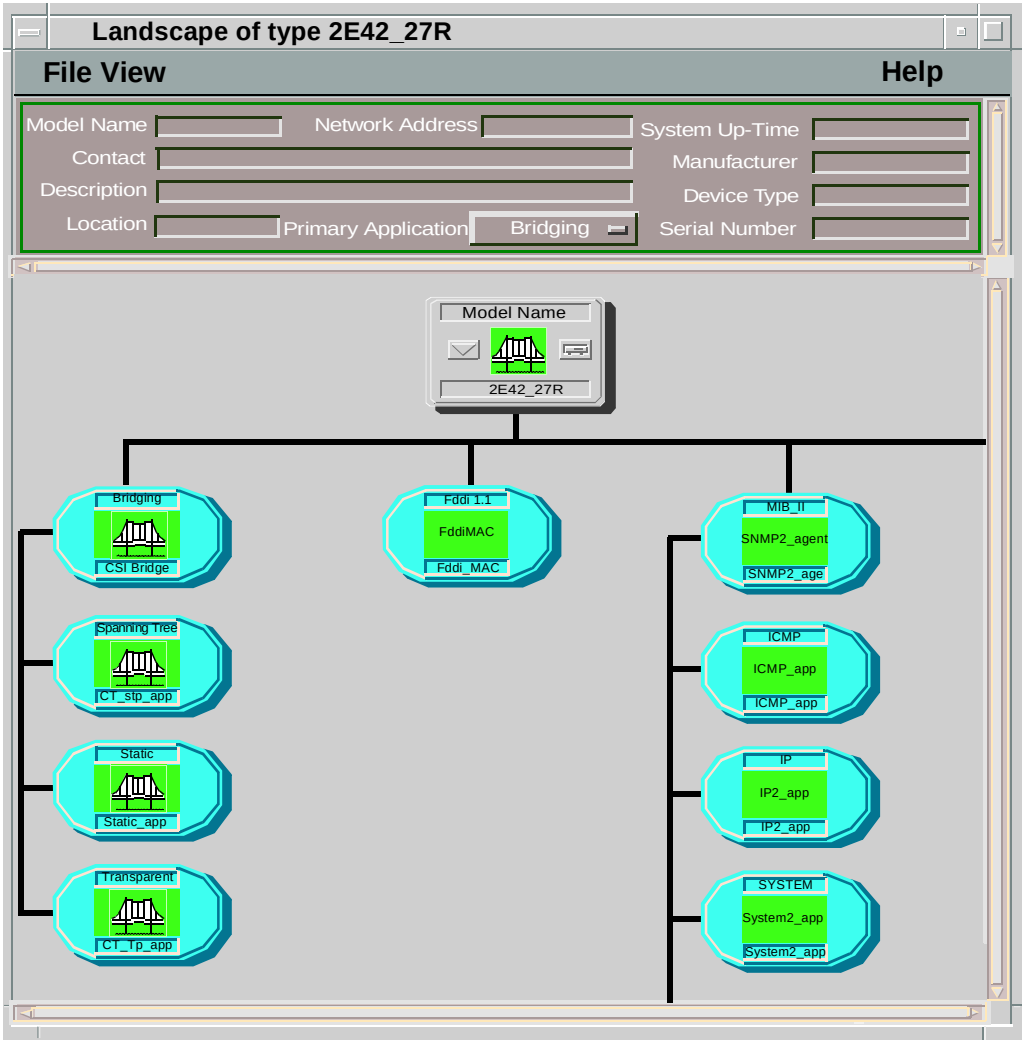
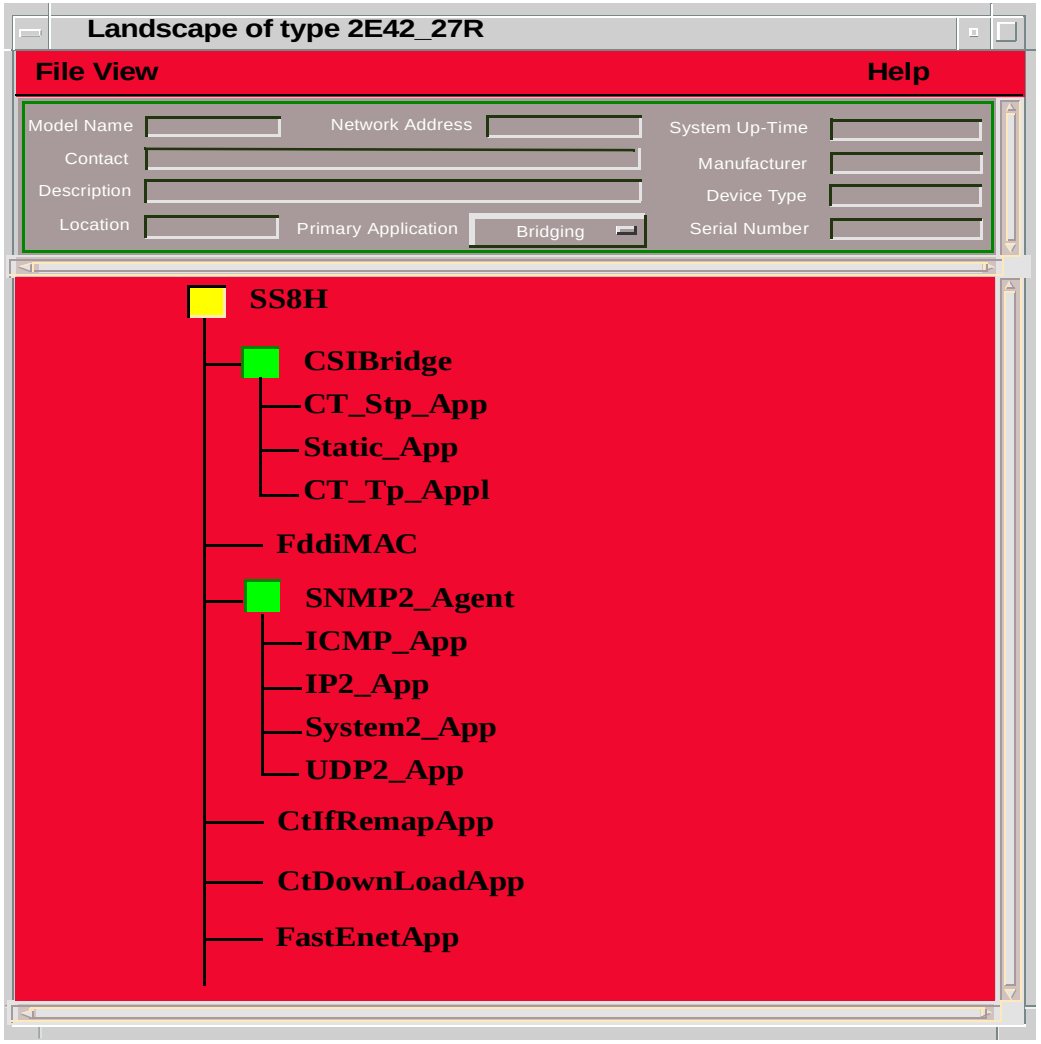


Figure 14: Device Application View (List Mode)



Interface Remap Application

The name of the model type used to model the application is CtIfRemapApp. The application provides the ability to map one or more interfaces to another interface. A map is defined by creating a row in the Interface Remap Table (described below) to specify the source and destination interfaces. When a source interface is remapped to a destination interface, the destination interface transmits all packets received or transmitted on the source interface. Counters on the destination interface increment for all packets transmitted by normal bridging or due to the interface remap. Figure 15 shows a view of the Interface Remap Table.

Access the Interface Remap Table as follows:

1. Highlight the CtIfRemapApp icon (Icon mode) or text label (List mode).
2. From the View menu, select **Icon Subviews -> Port Remap**.

The Interface Remap Table provides the following information:

Number Entries
The number of active entries in the Interface Remap Table.

Physical Errors Enable
Physical error remapping can be Enabled, Disabled, or Unsupported. Unsupported indicates that the device is incapable of remapping physical errors.

Max Number Entries
The maximum number of entries allowed in the Interface Remap Table.

Sort

Used to sort the Interface Remap Table.

Find

Used to search the Interface Remap Table for a specific interface.

Update

Used to update the Interface Remap Table.

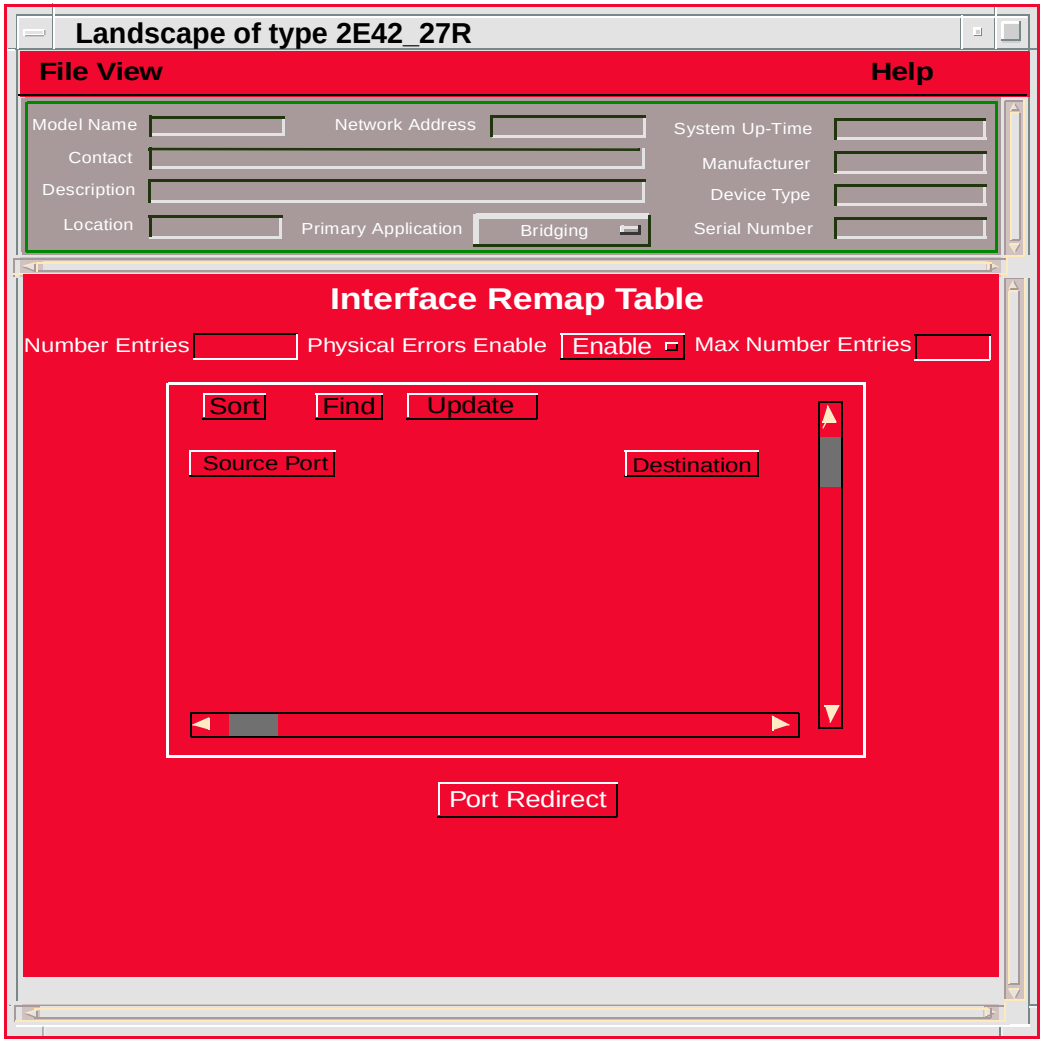
Source Port
The source interface that will have packets redirected to the destination interface as defined by **Destination**.

Destination
The interface that will see all packets redirected from **Source Port**.

Port Redirect

This button opens the Port Redirect view, where you can add or delete an entry from the table.

Figure 15: Interface Remap Table



Fast Ethernet Application

The name of the model type used to model the application is FastEnetApp. The application provides the Fast Ethernet Port Table and Fast Ethernet Configuration view, which allow you to configure ports for Ethernet or Fast Ethernet transmission or use Auto-Negotiation to determine transmission mode.

Fast Ethernet Port Table

Access this table as follows:

1. Highlight the FastEnetApp icon (Icon mode) or text label (List mode).
2. From the View menu, select **Icon Subviews -> Control Table**.

The Fast Ethernet Port Table provides the following information:

Interface
The interface number to which this Fast Ethernet information applies.

Port Group
The port group number to which this Fast Ethernet information applies.

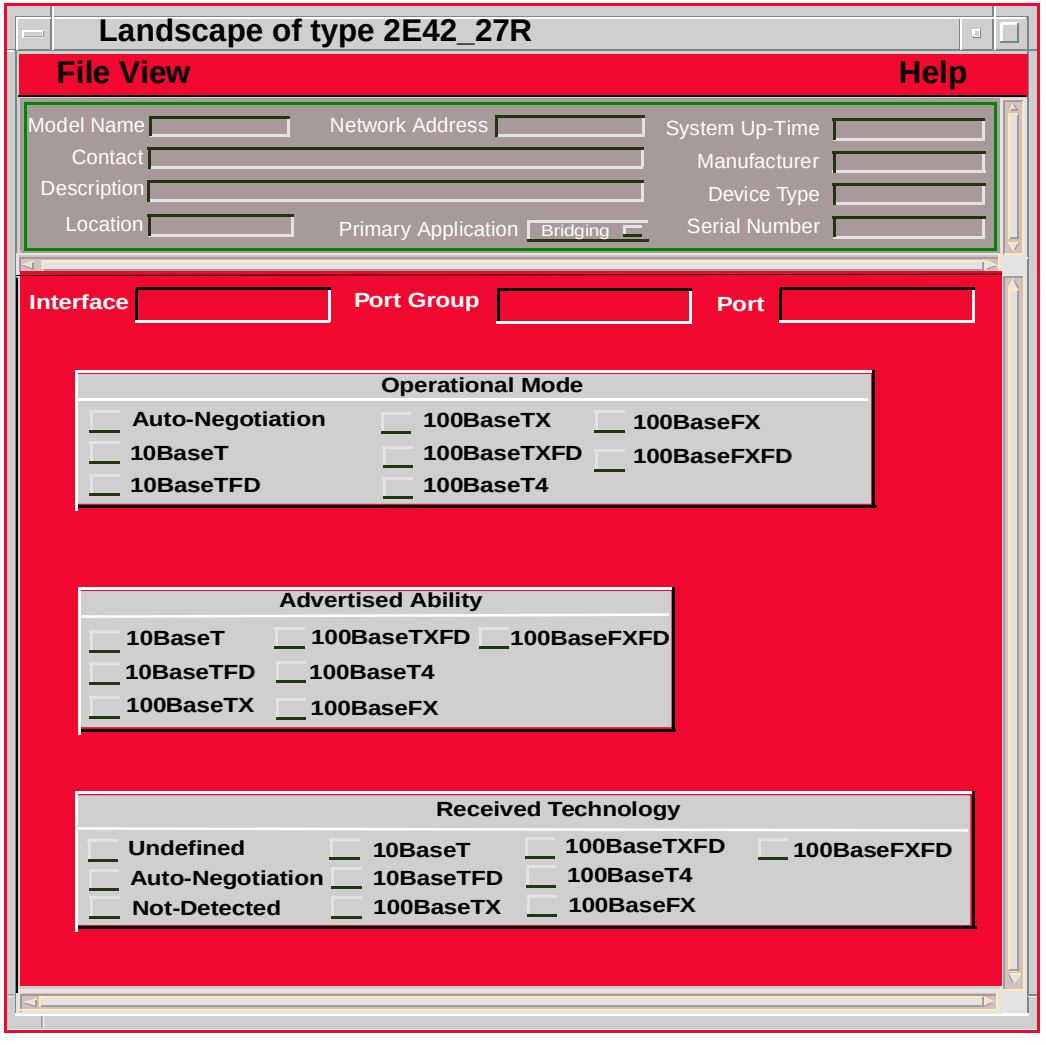
Port
The physical port number to which this Fast Ethernet information applies.

Operational Mode
The current operational mode of this port.

Fast Ethernet Configuration View

This view (Figure 16) allows you to configure ports for Ethernet or Fast Ethernet transmission or to use Auto-Negotiation in determining transmission mode. Open this view by double-clicking any entry in the Fast Ethernet Port Table. The Fast Ethernet Configuration view carries the Interface, Port Group, and Port information over from the Port Table.

Figure 16: Fast Ethernet Configuration View



Operational Mode

These selections indicate the current operational mode of this port. If you select Auto-Negotiation, you can select as many modes as needed from the Advertised Ability selections. You can only select one Operational Mode: either Auto-Negotiation or one of the specific modes. Table 17 lists the current operational modes, their values, and their descriptions.

Table 17: Current Operational Mode Values and Descriptions

Operational Mode	Value	Description
Auto-Negotiation	2	Auto-Negotiation/Parallel Detection
10Base-T	8	10Base-T
10Base-TFD	16	Full Duplex 10Base-T
100Base-TX	32	100Base-TX
100Base-TXFD	64	Full Duplex 100Base-TX
100Base-T4	128	100Base-T4
100Base-FX	256	100Base-FX
100Base-FXFD	512	Full Duplex 100Base-FX

Advertised Ability

These selections indicate the advertised ability of the local hardware. They become active on ports that have Auto-Negotiation enabled. Auto-Negotiation allows the FE-100TX RJ-45 port to self-configure to 10 or 100 Mbps depending on the speed of the attached device. The interfaces can also dynamically configure themselves for full duplex or half duplex (standard mode) operation when both ends of the link support Auto-Negotiation. When only one link partner supports Auto-Negotiation, the mode defaults to half duplex.

Both local and remote management for the SmartSwitch Module provide the ability to disable Auto-Negotiation if desired. A port that does not support Auto-Negotiation will be read as “other” (1).

Table 18 lists the Advertised Ability modes, their values, and their descriptions.

Table 18: Advertised Ability Mode Values and Descriptions

Advertised Ability	Value	Description
10Base-T	8	10Base-T
10Base-TFD	16	Full Duplex 10Base-T
100Base-TX	32	100Base-TX
100Base-TXFD	64	Full Duplex 100Base-TX
100Base-T4	128	100Base-T4
100Base-FX	256	100Base-FX
100Base-FXFD	512	Full Duplex 100Base-FX

Received Technology

These selections indicate the advertised ability of the remote hardware or link partner. These modes are read-only. Table 19 lists the Received Technology modes, their values, and their descriptions.

Table 19: Received Technology Mode Values and Descriptions

Received Technology	Value	Description
Undefined	1	Undefined
Auto-Negotiation	2	Auto-Negotiation/Parallel Detection
Not-Detected	4	Link Partner does not support Auto-Negotiation

Table 19: Received Technology Mode Values and Descriptions

Received Technology	Value	Description
10Base-T	8	10Base-T
10Base-TFD	16	Full Duplex 10Base-T
100Base-TX	32	100Base-TX
100Base-TXFD	64	Full Duplex 100Base-TX
100Base-T4	128	100Base-T4
100Base-FX	256	100Base-FX
100Base-FXFD	512	Full Duplex 100Base-FX

FDDI FNB Application

This section describes the FDDI FNB application supported by this device. The name of the model type used to model the application is FddiMAC.

This application is available when the appropriate High Speed Interface Module (HSIM) is installed.

Table 20 lists the application-specific subviews available from the Icon Subviews menu for the FDDI FNB application.

Table 20: FDDI FNB Application Subviews menu

Menu Selection	Description
DevTop	Opens the Device Topology view described in the ***Operator's Reference***.
Station List	Opens the FDDI Station List view described below.
Acknowledge	Allows you to acknowledge an alarm condition.

Table 20: FDDI FNB Application Subviews menu

Configuration	Opens the Device Configuration view described in *Configuration Views*.
Model Information	Opens the Model Information view described in the ***Operator's Reference***.

FDDI Station List View

This view displays information about the devices connected to the FDDI ring and provides the following functionality and information.

Update

This button updates the contents of the Station Table.

MAC/Canonical

This button controls which type of address is shown in the Station List. It toggles between MAC (Physical) and Canonical (Ethernet) and displays the format not currently selected.

Set Filter/Clear Filter

Set Filter Opens the Filter Dialog box for the selected column of the Station table. Type a character string to search the column.

Clear Filter returns the Station table to its normal state.

Sort Up

This button has three possible states: Sort Up, Sort Down, and Unsort.

Sort Up organizes the list within a selected column from the lowest alphanumeric value to the highest.

Sort Down organizes the list within a selected column from the highest alphanumeric value to the lowest.

Unsort returns the fields to their normal state.

Station Address

Displays the MAC or Canonical address of this node on the ring.

Node Class

Displays the type of FDDI ring device. Table 21 lists the possible node classes.

Table 21: FDDI Node Classes

Node Class	Description
Station	An FDDI node capable of receiving, transmitting, and repeating data.
Concentrator	An FDDI node that provides attachment points for stations that are not directly connected to the FDDI ring.

Ring Topology

Displays the current state of this FDDI node.

Master Ports

Displays the number of master ports on this node. Values range from 0 to 255.

Upstream Neighbor

Displays the canonical or MAC address of the last node to receive the token before this node.

ATM Client Application

This section describes the ATM Client application supported by this device. This application is available when the appropriate High Speed Interface Module (HSIM) is installed.

Table 22 lists the application-specific subviews available from the Icon Subviews menu for the ATM Client application:

Table 22: ATM Client Application Subviews menu

Menu Selection	Description
Configuration	Opens the Device Configuration view described in *Configuration Views*.
Model Information	Opens the Model Information view described in the ***Operator's Reference***.
VCL Table	Opens the ATM Client Application VCL (Virtual Channel Link) Table view described later in this section.
Interfaces	Opens the Interfaces view described later in this section.

ATM Client Application VCL View

This view provides a table containing detailed information about the virtual channels passing through this application. The ATM Client Application Virtual Channel Link view provides the following information.

Admin Status

This object is implemented only for a VCL that terminates a VCC (i.e., one that is not cross-connected to other VCLs). Its value specifies the desired administrative state of the VCL. The Up state indicates that the traffic flow for this VCL is enabled. The Down state indicates that the traffic flow for this VCL is disabled.

Oper Status

This object shows the current operational status of the VCL. The Up and Down states indicate that the VCL is currently operational or not operational, respectively. The Unknown state indicates that the status of this VCL cannot be determined.

Last Change

This is the value of the MIB II's sysUpTime object at the time the VCL entered its current

operational state. If the current state was entered prior to the last re-initialization of the agent, then this object contains a zero value.

RTD (Receive Traffic Description) Index

The value of this object identifies the row in the ATM Traffic Descriptor Table that applies to the receive direction of this VCL.

TTD (Transmit Traffic Description) Index

The value of this object identifies the row of the ATM Traffic Descriptor Table that applies to the transmit direction of this VCL.

AAL (ATM Adaptation Layer) Type

An instance of this object only exists when the local VCL endpoint is also the VCC endpoint and the AAL is in use. The type of AAL used on this VCC includes AAL1, AAL3/4, and AAL5. “Other” indicates a user-defined AAL type. “Unknown” indicates that the AAL type cannot be determined.

Transmit Size

This is the maximum AAL5 CPCS SDU size, in octets, that is supported on the transmit direction of this VCC. An instance of this object only exists when the local VCL endpoint is also the VCC endpoint and the AAL5 is in use.

Receive Size

This is the maximum AAL5 CPCS SDU size, in octets, that is supported on the receive direction of this VCC. An instance of this object only exists when the local VCL endpoint is also the VCC endpoint and the AAL5 is in use.

Encaps Type

This is the type of data encapsulation used over the AAL5 SSCS layer. An instance of this object only exists when the local VCL endpoint is also the VCC endpoint and the AAL5 is in use. The definitions reference RFC 1483 Multiprotocol Encapsulation over ATM AAL5 and to the ATM Forum LAN Emulation specification.

This object is implemented only for a VCL that is cross-connected to other VCLs that belong to the same VCC. All such associated VCLs have the same value for this object, and all their cross-connections are identified by entries in the Cross Connect Table for which VCL CC Id has the same value. The value of this object is initialized by the Row Status agent after the associated entries in the Cross Connect Table have been created.

This object is used to create, delete, or modify a row in this table. To create a new VCL, this object is initially set to “createAndWait” or “createAndGo.” This object must not be set to “active” unless the following columnar objects exist in this row:

- RTD Index
- XTD Index

- AAL Type (if the local VCL endpoint is also the VCC endpoint)
- Transmit Size (for AAL5 connections only)
- Receive Size (for AAL5 connections only)
- Encaps Type (for AAL5 connections only)

Note:

The Community Name field in the Communication Information Panel of the Model Information view must be set to "private" in order to change the fields in the table views.

To make a change to the rows in the table view, do the following:

1. In the Communication Information panel of the Virtual Link view, change the Community Name field to "private."
2. From the Icon Subviews menu, select **Table View**.
3. Set the path information for the row you wish to create, change, or remove.
4. Press **Return** and click on **OK**.
5. To create or change a row, click on the **Create** button, change the applicable fields in the Change view, and click the right mouse button. Click **OK**.
6. Click on the **Validate Row** button and return to the Application Table view to see the change.
7. To remove a row, click on the **Remove** button and then the **Update** button. The row will then be removed from the table view.

The Virtual Channel Link table can be sorted, searched, and updated using the following buttons within the view:

Sort

This button allows you to sort the table based on the column heading you select. To use the Sort feature, select a column heading and click on the **Sort** button. The table is rearranged according to the chosen column.

Find

This button allows you to search the table for a specific entry. To use the Find feature, select a column heading, click on the **Find** button, and enter a search string in the dialog box.

Update

This button allows you to update information in the table.

Double-clicking on a field entry opens the interface-specific ATM Switch Application Virtual Channel Link view, which contains the following information. You can change these fields.

Interface
This field displays the interface index for this VPI and VCI.

VPI (Virtual Path Identifier)
This field displays the VPI value of the VCL. The maximum VPI value cannot exceed the value allowable by the Interface MaxVPI Bits.

VCI (Virtual Channel Identifier)
This field displays the VCI value of the VCL. The maximum VCI value cannot exceed the value allowable by the Interface MaxVCI Bits.

Admin Status
This object is implemented only for a VCL that terminates a VCC (i.e., one that is NOT cross-connected to other VCLs). Its value specifies the desired administrative state of the VCL. The Up state indicates that the traffic flow is enabled for this VCL. The Down state indicates that the traffic flow is disabled for this VCL.

Oper Status
This object indicates the current operational status of the VCL. The Up and Down states indicate that the VCL is currently operational or not operational, respectively. The Unknown state indicates that the status of this VCL cannot be determined.

Row Status
This object is used to create, delete, or modify a row in this table. To create a new VCL, this object is initially set to “createAndWait” or “createAndGo.” This object must not be set to “active” unless the following columnar objects exist in this row:

- RTD Index
- XTD Index
- AAL Type (if the local VCL endpoint is also the VCC endpoint)
- Transmit Size (for AAL5 connections only)
- Receive Size (for AAL5 connections only)
- Encaps Type (for AAL5 connections only)

Encaps Type
This is the type of data encapsulation used over the AAL5 SSCS layer. An instance of this object only exists when the local VCL endpoint is also the VCC endpoint, and AAL5 is in use. The definitions reference RFC 1483 Multiprotocol

Encapsulation over ATM AAL5 and to the ATM Forum LAN Emulation specification.

AAL (ATM Adaptation Layer) Type
This is the type of AAL used on this VCC, which includes AAL1, AAL3/4, and AAL5. An instance of this object only exists when the local VCL endpoint is also the VCC endpoint, and AAL is in use. The other may be a user-defined AAL type. The Unknown type indicates that the AAL type cannot be determined.

Last Change
The value of MIB II's sysUpTime object at the time this VCL entered its current operational state. If the current state was entered prior to the last re-initialization of the agent, then this object contains a zero value.

Cross Connect Id
This object is implemented only for a VCL that is cross-connected to other VCLs that belong to the same VCC. All such associated VCLs have the same value of this object, and all their cross-connections are identified by entries in the Cross Connect Table for which VCL CC Id has the same value. The value of this object is initialized by the agent after the associated entries in the Cross Connect Table have been created.

Xmit Descr Index
The value of this object identifies the row of the ATM Traffic Descriptor Table that applies to the transmit direction of this VCL.

Transmit Size
An instance of this object only exists when the local VCL endpoint is also the VCC endpoint, and AAL5 is in use. The maximum AAL5 CPCS SDU size in octets that is supported on the transmit direction of this VCC.

Rcv Descr Index
The value of this object identifies the row in the ATM Traffic Descriptor Table that applies to the receive direction of this VCL.

Receive Size
An instance of this object only exists when the local VCL endpoint is also the VCC endpoint, and AAL5 is in use. The maximum AAL5 CPCS SDU size in octets that is supported on the receive direction of this VCC.

Download Application View

This application provides download functionality for this device. The model type for this application is CtDownLoadApp. Access the Download Application view as follows:

1. Within the Application view, highlight the CtDownLoadApp icon (Icon mode) or model type name (List mode).
2. From the View menu, select **Icon Subviews -> Download Application**.

The Download Application view is an SPMA view, which is described in the ***SPECTRUM Portable Management Application Tools Guide***.

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